



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Toshihiro Tsumori Art Unit: 1773
Serial No.: 10/646,506 Examiner: Louis Falasco
Filing Date: August 22, 2003
For: Substrate for Perpendicular Magnetic Recording Hard
Disk Medium and Method For Producing The Same

Assistant Commissioner for Patents
Washington, D. C. 20231

DECLARATION PURSUANT TO RULE 132

I, Toshihiro Tsumori, hereby sincerely and solemnly declare that

1. I graduated in engineering from Yamaguchi University in March, 1987. Since April, 1987, I have been employed by Shin-Etsu Chemical Co., Ltd., assignee of the above-identified application where I has been engaged in research and development of Si substrates for HDD since 1998. I am the inventor of the above-identified application and I am familiar with the subject matter disclosed in the application as well as the disclosures in the references cited against the claims.
2. In order to exhibit the advantageous effect of plating over sputtering in the formation of the soft magnetic layer, the following Example 5 and Comparative Example 1 were carried out.

<Example 5>

The surface-treated substrate comprising an Si single crystal having a diameter of 65 mm, an under-plated layer formed on said substrate having Ni, and a plated soft magnetic layer formed on said under-plated layer was prepared in the same manner as in Example 1. The soft magnetic layer having a composition of 75 mol% Co, 10 mol% Ni and 15 mol% Fe was polished in the same manner in Example 1. The surface of the surface-treated substrate was analyzed with AFM (atomic force microscope) and the result is shown in Figure 4.

<Comparative Example 1>

The surface-treated substrate comprising an Si single crystal having a diameter of 65 mm, and an under-plated layer formed on said substrate having Ni was prepared in the same manner as in Example 1. Subsequently, the soft magnetic layer was formed at film formation rate of 10 nm/min under Ar gas pressure of 3.5 mmTorr at 25°C using a RF magnetron sputtering device (product of ULVAC Inc.). The surface of the surface-treated substrate was analyzed with AFM (atomic force microscope) and the result is shown in Figure 5.

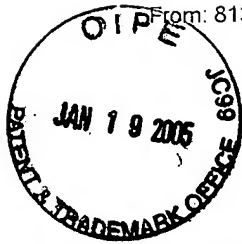
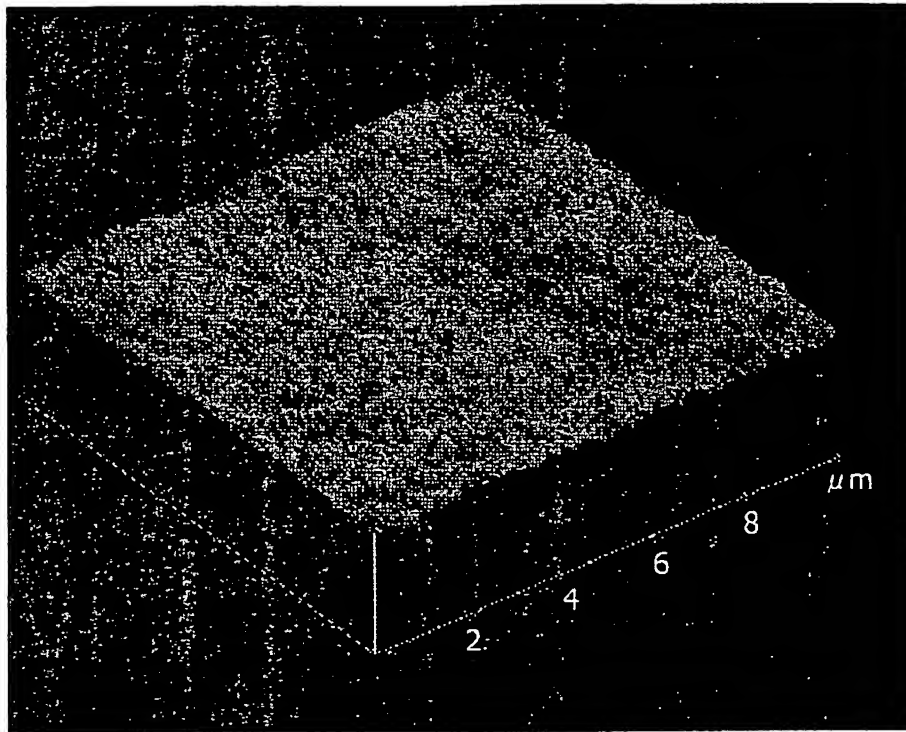
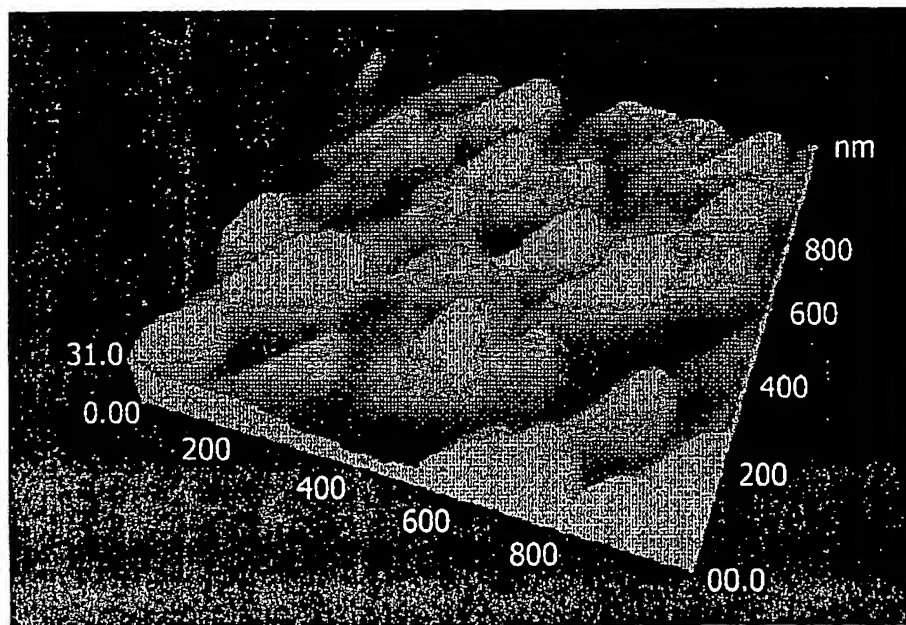


FIG.4



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FIG.5



3. It is evident in Figure 5 that the surface of the soft magnetic layer produced in the sputtering method was rough. On the other hand, the surface of the plated soft magnetic layer was flat and smooth.

4. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent resulting therefrom.

Dated: Dec. 16, 2004

Toshihiro Tsumori 